




9-1977

Heavy Obstacles for Light Rail

Vukan R. Vuchic

University of Pennsylvania, vuchic@seas.upenn.edu

Follow this and additional works at: http://repository.upenn.edu/ease_papers

 Part of the [Systems Engineering Commons](#), and the [Transportation Engineering Commons](#)

Recommended Citation

Vukan R. Vuchic, "Heavy Obstacles for Light Rail", *Railway Age*, 62-64. September 1977.

This paper is posted at ScholarlyCommons. http://repository.upenn.edu/ease_papers/776
For more information, please contact repository@pobox.upenn.edu.

Heavy Obstacles for Light Rail

Abstract

Close to 500 persons, including government officials, transit system operators, city planners, car builders, suppliers, and consultants, came to Boston Aug. 28-31 for a "National Conference on Light Rail Transit."

Although the size of the crowd was evidence of light rail's growing popularity (RA, Aug. 8, p. 36), the conference also heard warnings about trends that could hamper the growth of light rail. Vukan R. Vuchic, professor of transportation engineering at the University of Pennsylvania, discussed some of those disturbing trends in a speech delivered at the meeting. Following are excerpts of his remarks.

Disciplines

Engineering | Systems Engineering | Transportation Engineering

Heavy obstacles for light rail

Close to 500 persons, including government officials, transit system operators, city planners, car builders, suppliers, and consultants, came to Boston Aug. 28-31 for a "National Conference on Light Rail Transit." Although the size of the crowd was evidence of light rail's growing popularity (RA, Aug. 8, p. 36), the con-

ference also heard warnings about trends that could hamper the growth of light rail. Vukan R. Vuchic, professor of transportation engineering at the University of Pennsylvania, discussed some of those disturbing trends in a speech delivered at the meeting. Following are excerpts of his remarks.

By VUKAN R. VUCHIC
Professor of Transportation Engineering,
University of Pennsylvania

The slow development of Light Rail Transit, particularly in this country, can be explained by a number of serious obstacles which we are facing.

We have very deeply rooted double standards for different types of expenditures. We tend to consider all private expenditures as a desirable consumer behavior which "moves the economy," but we tend to hold all public expenditures as a suspicious investment which is often a "waste of taxpayers' money." A popular view is that if a person purchases an automobile with vinyl roof, push-button windows, and power brakes (which can hardly make 10 miles per gallon), that represents a "desirable expenditure," while construction of new public facilities, such as transit lines, is an investment which should be minimized by all possible means.

Does that really make sense? Should we consider the automobile industry as the most vital and most desirable basis of our entire economy? Shouldn't we include many public works for constructing permanent, efficient, and extremely useful facilities as an even more attractive mover of our economy? Let us not forget that a major factor in adopting the law which instituted the Interstate Highway System was creation of jobs and stimulation of our economy. We should now focus our forces on similar types of public works, but primarily on those works which permanently benefit our cities and society.

● **"Closed-eyes happiness."** Our country is obviously in a state of what could be described as "closed-eyes happiness." It is quite unpleasant to think about the worsening energy problem, so we choose to totally ignore it. The President's energy program, which is rather modest and possibly inadequate if his description of the seriousness of the problem is correct, has been attacked as too drastic!

If the problem was not so serious, it would be quite amusing to observe some representatives in the Congress declaring that with the 5-cent-a-gallon gasoline tax

"people will not be able to get to their work places." The same representatives do not express such concern when communities run out of funds to support a minimum bus service to large segments of our cities. This "let them eat cake" approach is hardly a sign of enlightened leadership.

A major oversight in the energy program has been a virtually total omission of consideration of transit as a major factor in improving energy efficiency. The President's program takes a popular but incorrect view which contends that "we cannot get people out of their automobiles" and that the "role of transit is not significant." The former has been proved wrong in many cities, while the latter is incorrect in its basic approach.

It is neither the present volume of transit usage, nor its present role that should be considered. The potential of transit lies in its ability to serve a much larger share of urban travel if properly financed, designed, and operated; with increased ridership transit can effect a much greater energy saving than is now the case. The obstacles to LRT developments specifically, which hopefully we can influence more than the preceding ones, have included the following major factors:

An extremely serious problem is the very high degree of major errors in both design of rail transit systems, and in manufacturing of rail vehicles, control systems, and other components. Due to serious incompetence in these fields, we have actually "invented" a new version of transit modes: rapid transit with low reliability. This is directly contrary to one of the basic characteristics of rail transit. In dozens of cities around the world this mode has been operating with reliabilities very close to 100% for many decades. The new rapid transit system in Munich had two significant delays during the first year of operation. Some of our new systems have that many delays on a "regular basis" every week, or often in one day.

Let me point out the fact that if telephones in Albania do not work well, that is hardly a proof that the telephone system as a means of communication is inefficient and unreliable. Yet, the opponents of rail are trying to say that because some of our

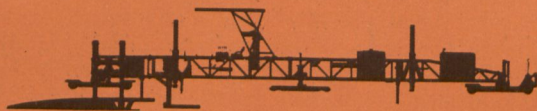
new rail systems have frequent breakdowns, rail transit in general is ineffective and unreliable. Not only transit operators, but millions of rail transit users in New York, London, Berlin, and many other cities know very well that high reliability is one of the basic inherent characteristics of properly designed and completely managed rail transit. They also know that rail transit is a major asset of their cities.

While debates and criticisms of urban transportation planning can be useful and productive, this is the case only with constructive criticism. We do have, unfortunately, a vocal group of professional critics who are usually opposed to all improvements of not only public transportation, but of cities in general. Because of the major role of rail transit in cities, this mode is their primary target.

● **Shades of Luddites.** Most of these critics explain all conceivable problems very simply: by rail technology. (They remind us of the Luddites in England, the group of extremists who, about 150 years ago, blamed machines for their unemployment and tried to solve the problem by destroying them!) According to them, rubber-tired vehicles on highways, ranging from buses down to jitneys and car pools would offer better and cheaper service. A truly classic proposal was the one suggesting that in cities without transit people who do not own cars could use taxis or rent-a-car for many of their trips. This would, presumably, make a suitable solution for people on welfare, if we neglect the problem that they would stay without food!

The facts that separate right of way is the key to transit performance and for competitiveness with the automobile, regardless of transit technology, and that such right-of-way is the main element in investment cost, again regardless of technology, are completely ignored. Successful rail systems, such as the Lindenwold Line, and the LRT, for which most of the criticism would be invalid, are not mentioned.

It is very unfortunate that the extremely unrealistic planning for the year 2000 or 2020 utilizing large computer models and producing megalomaniac plans, which was the fashion of the 1960s, has now been



LORAM AUTOSLED/PLOW

...for true automation in track rehabilitation



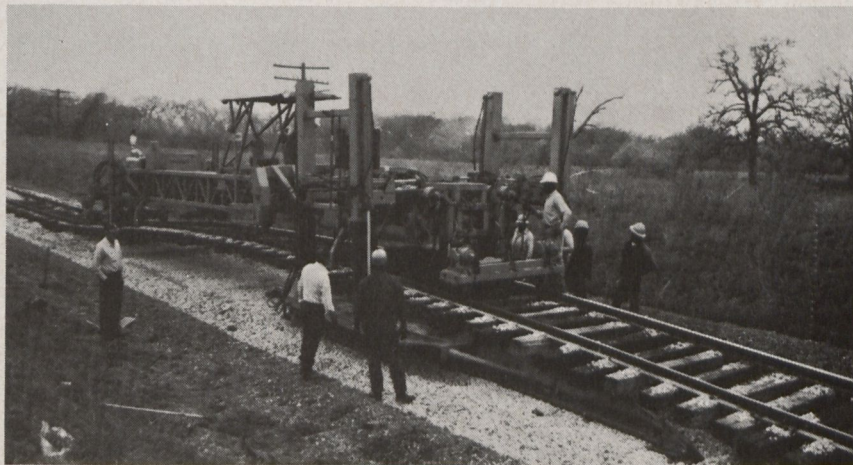
PERFORMANCE CHECKLIST:

The diesel powered Loram Autosled/Plow —

- ☐ Economically plows out foul crib material to the sub ballast.
- ☐ Automatically removes and throws marked ties out of the work area (in one piece for salvage or resale).
- ☐ Re-aligns the track to $\pm 1"$ as it returns to the smooth tie bed.
- ☐ Clearly marks rail for exact tie spacing.

☐ with new ties in place,

the track is again raised and new or reclaimed ballast is sledded to the desired height with the plow blades on the sled in their up position.



- ☐ **Result:** Safer track for heavier pay loads and faster schedules through the use of automated equipment that makes less complete methods too expensive to use and individual units obsolete. Available for sale, lease or on a total Loram operated contract basis.

FOR FULL DETAILS,
OR SHOWING OF
OPERATING FILMS,
WRITE OR CALL TODAY



MAINTENANCE OF WAY, INC.

3900 Arrowhead Drive • Hamel, MN 55340 U.S.A.
PHONE: (612) 478-6014 • TELEX: 29-0391; Cable, LORAM

MEMBER
RPI
RAILWAY
PROGRESS
INSTITUTE



Profit Management Systems

KEY TO STRONGER RAILROADS

by Edward C. Christ

Here is a modern corrective to basic flaws in company policy and practices that all too often have contributed to capital erosion, financial losses and bankruptcy.

SIMMONS-BOARDMAN

Edward C. Christ, author of this important new book, started working with computers twenty-five years ago when he was trained as a programmer for the first UNIVAC.

Mr. Christ, Director-Data Services for Conrail, joined the Pennsylvania Railroad's market research department in 1966. Since then he has gained valuable insight to the problem of navigating in a sea of statistics, instead of drowning in it. He has served with many industry committees dealing with marketing information problems.

Mr. Christ has a bachelor's degree from St. Joseph's College and a master's degree in Economics from Temple University. In addition to his railroad duties, he has been an instructor in Economics for twenty-two years.

Send in the coupon today, while our stock of "Profit Management Systems" is still large. If, for any reason, you don't think it offers a timely and tremendous contribution to making railroads financially strong, return it within ten (10) days for a full refund of your money.

Simmons-Boardman Publishing Corp.
Book Div., 508 Birch St., Bristol Ct. 06010

Gentlemen:

Here is my check for \$_____, for which please send me _____ copies of "Profit Management Systems," at \$14.95 per copy.

I understand if I am not completely satisfied, I can return all copies within ten days for a full refund.

NAME _____
RAILROAD _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

substituted, at least in the United States and Great Britain, by an ultraconservative philosophy of no investment, a philosophy of "thinking small and not far ahead." We have now been bouncing between the unrealistic, imaginary future, and vague proposals that we should return to the "free competition" and primitive organization of urban transportation which was actually superseded about the time the twentieth century arrived 77 years ago.

In reviewing and summarizing the developments and various factors influencing the development of LRT, we can see that the potential of LRT is now very strong, certainly far greater than most of us could have predicted several years ago. This potential is often underestimated because of incorrect tendency to use the maximum and often exaggerated capacities as the required criteria for introduction of a mode. First, it is not true that we must have 40,000 persons per hour for rail rapid transit (actually, it is physically impossible to have such a volume where there is no rapid transit!) We do not need 20,000

for LRT, 10,000 for a busway or 3,000 for a surface bus line. These figures are maximum capacities of modes, upper limits of their applications.

Each one of these modes is justified by much lower volumes. LRT can effectively serve 2-3,000 per hour; many bus lines operate with a few hundred passengers per hour. Further, peak-hour volume in one direction is not the only criterion to begin with: System performance and service quality are often the dominant factors. If this is properly understood, it is then obvious that a great number of our cities have corridors or entire networks which are suitable for LRT.

Unless we remove the serious obstacles to transit improvements and accelerate our progress in that direction, we will not be prepared for the sharpening energy crisis, for the increasing economic and social problems in our cities, for recovery of our deteriorating urban environment, and for all the problems which extreme private affluence and public poverty bring with them. ■

Rail transit: The view from UMTA

Addressing the LRT conference in Boston, UMTA Administrator Richard S. Page paid his warm respects to light rail ("a versatile, flexible mode—a technologically proven concept—which produces minimal environmental and esthetic disruption in a community")—and then went on to talk about what he called "the larger rail transit matter." He listed the following "set of policies," which he said would guide UMTA in deciding how to spend its "limited available funds":

"UMTA will continue to press for transportation plans so the full transportation systems initiatives of each community are known and agreed to.

"Alternatives analyses will continue to be required for all proposals for fixed guideway projects. Any recommendation to UMTA for assistance for construction or extension of a rail system will have to demonstrate clear and convincing need for such a system in transit terms—not just marginal need based on future and uncertain possibilities.

"Alternatives analyses should not be limited to consideration of conventional heavy rail and buses alone; they also should consider such concepts as light rail and people movers.

"We will never again see a total rail transit system spring full-blown from the drawing board...the costs are overwhelming. By constructing rail systems in small increments, a community can expand its transit system as need and finances dictate. I am very pleased to see that the cities currently in alternatives analysis are planning fairly short light rail segments in the central business districts which may

form the core of larger systems to be built gradually.

"Localities building rail transit with federal assistance will be required to commit themselves to the development and implementation of a program of local supportive policies and actions that will enhance the system's cost-effectiveness, patronage, and prospect for economic viability; UMTA will strictly enforce such commitments. Supportive actions are to include such actions as coordinated bus and/or feeder systems, and zoning and development incentives to stimulate high-density private real estate development around stations. Above all, they should strive for *balanced* transportation solutions, treating rail transit as an integral—but not the only—element in their total transportation programs.

"UMTA will require communities to develop realistic estimates of future operating expenses and achieve a local consensus on the specific means of funding these expenses. As a condition of federal capital assistance, we will require the development of a stable and reliable source of local revenue to cover operating deficits.

"Construction grant contracts will be negotiated with a fixed ceiling on the federal contribution, subject to a defined method of adjusting for inflation.

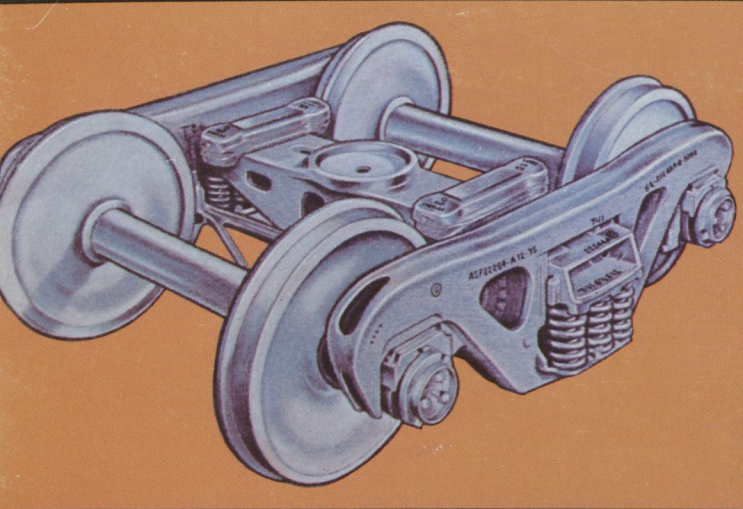
"Finally, UMTA will strengthen its role in monitoring projects during the planning and design stages in order to prevent overdesign, untested technologies, subsystems, and components which might adversely affect future operating and maintenance costs."

MOVING PEOPLE: Heavy
obstacles for light rail

September 12, 1977

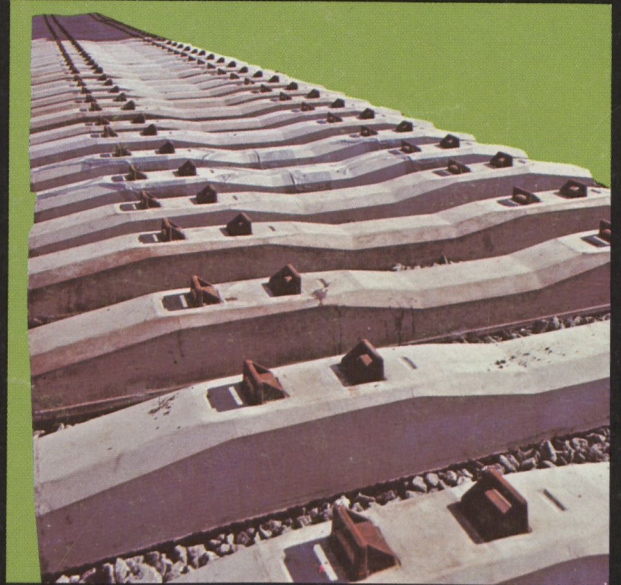
RAILWAY AGE

#45
#46



**Freight-car trucks:
The continuing search
—and need— for
improvements**

**Why DOT opted for
concrete ties in the
Northeast Corridor**



**C&S exhibit guide:
Where to stop,
look, and listen**